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ABSTRACT

Intended for use by all electronic recording instructors in the Metropolitan Nashville Public Schools, this guide provides a sequential listing of course content and scope. A course description provides a brief overview of the content of the courses offered in the electronic recording program. General course objectives are then listed. Outlines of the course content are presented for these courses: electronic recording I and II. Suggested time and specific objectives are provided for each major topic. Topics include operation of a multitrack recording studio, skills essential for recording engineers or technicians, safety procedures, and equipment care and use. (YLB)

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ELECTRONIC RECORDING

SCOPE AND SEQUENCE

VOCATIONAL EDUCATION

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Metropolitan Public Schools

Nashville Davidson County, Tennessee

Charles O. Frazier, Director

FOREWORD

This scope and sequence guide, developed for the Electronic Recording Vocational Education program, represents an initial step in the development of a systemwide articulated curriculum sequence for all vocational programs within the Metropolitan Nashville Public School System. It is a direct result of needs expressed by teachers, parents, and the business community for sequential structure within the vocational education curriculum. An articulated vocational curriculum allows a student to move from one level of instruction to the next without repeating learning tasks already mastered, and without experiencing gaps in the presentation of relevant instructional material.

A goal of this curriculum effort is to provide teachers a usable guide based on input from the teachers. The initial step was an identification of course content, with all teachers having an opportunity to contribute. What follows is a publication using the teachers' contributions: a sequential listing of objectives and skills for each program offering.

This guide does not include all specific resource materials that may be used to assist students in acquiring minimum competencies. It is to serve as a guide for the sequence of course content and scope of what is to be taught. This guide content is extremely important and its use is encouraged. The suggested competencies and resource materials allow instructors an opportunity to be creative and resourceful in meeting the needs of individual programs and students.

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Vic Gabany	Hillsboro

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INTRODUCTION

The Electronic Recording program is unique in that presently it is one of three programs in the state of Tennessee. It is hoped that this vocational guide will serve as an aid for curriculum development and program planning in the event additional recording programs are initiated.

The recording format of the studio is 16 track recording. Professional recording equipment is used throughout the facility. The course curriculum and studio design were developed in 1976 by Vic Gabany.

COURSE DESCRIPTION

Electronic Recording I is a two hour beginning recording class, and must be successfully completed before enrolling in Electronic Recording II and III, advanced recording classes.

Instruction centers around the operation of a recording studio and other areas of work involving sound. Students receive an in-depth study of the recording industry in a modern 16 track recording studio equipped with professional recording industry equipment. Live recording sessions comprise the practical portion of the course.

Classroom instruction consists of the study of math, physics and electronics. "Troubleshooting" and maintenance of the equipment is an important component of the instructional program.

Graduates of this program should gain entry level skills for employment in the recording and entertainment industry as well as other related areas such as public address sound reinforcement, radio production and television production.

GENERAL COURSE OBJECTIVES

1. To provide training in the operation of a multi-track recording studio
2. To develop knowledge, understanding and skills essential for employment as a recording engineer or recording technician in a recording studio, or other related work areas
3. To teach safety procedures and safety habits
4. To teach proper care and use of tools and equipment
5. To provide diverse instructional methods consisting of lectures, demonstrations, films, slide presentations, recording sessions, handouts, reading assignments and field trips

COURSE CONTENT FOR ELECTRONIC RECORDING I

(First Semester)

I. **School and course introduction (1 week)**

Specific objectives:

To understand course requirements and content
To understand Vocational Industrial Clubs of America (VICA)
To be made aware of class and school policies
To be made aware of the grading policy

A. Understands school policies and class policies

B. Learns VICA operation, policy, and contest procedures

C. Understands grading policy

D. Understands course requirements and course description

II. **Math as applied in recording (2 weeks)**

Specific objectives:

To reinforce previously learned math skills
To learn math skills needed for this course

A. Reviews fractions, decimals and basic algebra

B. Reviews electronic equations

III. **Physics of sound (2 weeks)**

Specific objectives:

To understand the manner in which sound is produced
To understand frequently used recording terms

A. Learns frequently used terms

B. Understands and recognizes decibel

C. Understands and recognizes sound and vibration

D. Understands and recognizes frequency range of musical instruments

III. **Physics of sound continued:**

E. Understands and recognizes dynamic range of music

F. Understands and recognizes frequency response and dynamic range of audio equipment

G. Understands and recognizes frequency response and logarithms

H. Understands and recognizes human voice

I. Understands and recognizes wave lengths of sound

J. Understands and recognizes sound and hearing

IV. **Basic electricity (3 weeks)**

Specific objective:

To learn basic concepts of electricity needed to properly operate and maintain recording studio equipment

A. Understands electrical terms

B. Understands basic DC circuits

C. Understands Ohm's law

D. Understands power formulas

V. **Safety and first aid (1 week)**

Specific objectives:

To learn good electrical safety habits
To learn what to do in case of an accident

A. Learns safety in recording studio

B. Learns first aid

VI. **History of recording (1 week)**

Specific objectives:

To become acquainted with the development of the recording industry

Specific objectives continued:

To learn of earlier recording methods

A. Studies world-wide recording history

B. Studies Nashville recording history

C. Studies early recording methods

VII. Test equipment and tools (1 week)

Specific objectives:

To learn proper manner of using test equipment and tools
To learn how to set up a tool box

A. Learns tool identification and use

B. Uses test equipment

C. Assembles tool box

VIII. Recording studio—basic layout (1 week)

Specific objectives:

To become acquainted with basic layout generally used in a recording studio
To understand basic functions of the various areas and equipment of the recording studio

A. Understands physical layout

B. Understands equipment recording chain

IX. Fundamentals of the recording process (½ week)

Specific objectives:

To become acquainted with basic manner of which a recording session is conducted
To understand basic recording session procedures

A. Understands and practices basic studio session procedures

1. Live mix

2. Overdub

A. Understands and practices basic studio session procedures continued:

3. Remixing

4. Editing

5. Sequencing

B. Understands and practices recording session procedures

X. **Microphones (1 week)**

Specific objectives:

To learn basic operating principles of microphones
To become familiar with different types of microphones

A. Learns basic operating principles

1. Types of microphones

2. Microphone terminology

3. Phantom power

4. Directional characteristics

5. Polar patterns

6. Frequency response

7. Proximity effect

8. Microphone impedance

9. Microphone sensitivity

10. Balanced and unbalanced lines

11. Microphone plugs

12. Causes of distortion

B. Understands and demonstrates microphone usage

1. Sound localization

2. Stereo microphone placement

B. Understands and demonstrates microphone usage continued:

3. Multi-microphone placement

4. Use of special purpose microphones

5. Miking various musical instruments

XI. Speakers (1 week)

Specific objectives:

To learn basic operating principles of speakers
To become familiar with different types of speakers

A. Learns basic operating principles

B. Learns and uses various types of speakers

1. Speaker terminology

2. Directional characteristics

3. Frequency response

4. Room/speaker interface

5. Speaker enclosure systems

XII. Recording console fundamentals (4 weeks)

Specific objectives:

To understand basic operating principles of all recording consoles
To understand basic principles of the recording console in our studio

A. Understands recording console terminology

B. Understands basic control identification

C. Understands basic signal flow

COURSE CONTENT FOR ELECTRONIC RECORDING I

(Second Semester)

I. **Tape recorder fundamentals (2 weeks)**

Specific objectives:

To understand basic operating principles of all tape machines
To understand basic principles of the tape machine in our studio

A. Understands tape machine terminology and principles of operation

B. Understands basic control identification

C. Understands basic signal flow

II. **Signal processing equipment (1 week)**

Specific objectives:

To become acquainted with various types of signal processing equipment
To gain information on the uses of various types of signal processing equipment

A. Learns and uses limiters

B. Learns and uses compressors

III. **Special effects equipment (1 week)**

Specific objectives:

To become acquainted with various types of special effects
To gain information on uses of various types of special effects equipment

A. Learns and uses digital delay

B. Learns and uses harmonizer

C. Learns and uses doubling

D. Learns and uses flanging

E. Learns and uses chorus

IV. **Recording tape fundamentals (1 week)**

Specific objectives:

To explain manufacturing process of magnetic recording tape
To understand how sound is imprinted on magnetic recording tape

A. Understands manufacturing process

B. Understands principles of magnetic recording

V. **Noise and noise reduction (1 week)**

Specific objectives:

To understand what noise is
To understand how noise is eliminated in recording and the various types of equipment used

A. Defines noise

B. Understands Dolby noise reduction

C. Understands DBX noise reduction

VI. **Basic miking techniques (2 weeks)**

Specific objectives:

To understand various methods of miking
To become familiar with advantages and disadvantages of various methods of miking

A. Understands and utilizes vocal miking

B. Understands and utilizes instrument miking

C. Studies baffles and enclosures

D. Studies isolation rooms

VII. **Basic studio design (1 week)**

Specific objectives:

To gain information on basic considerations when designing a recording studio

VII. **Basic studio design continued:**

Specific objectives:

To understand why our recording studio was built in the manner it is

A. Understands room dimensions and design

B. Understands construction materials

C. Understands recording equipment

VIII. **Remote recording (1 week)**

Specific objectives:

To gain information on how recordings are made outside the recording studio
To gain information on equipment and items needed different from that of a recording studio

A. Learns remote recording procedures

B. Understands remote recording unit

C. Understands equipment and materials

IX. **Acoustical tests and measurements (1 week)**

Specific objective:

To learn basic concepts of acoustical testing periodically required in the recording studio

A. Conducts room tuning tests

B. Conducts audio equipment tests

X. **Basic electronics (5 weeks)**

Specific objective:

To learn basic concepts of electronics

A. Understands DC theory

B. Understands AC theory

XI. **Basic studio maintenance (2 weeks)**

XI. **Basic studio maintenance continued:**

Specific objective:

To gain information necessary to perform needed studio maintenance

A. Performs basic troubleshooting

B. Performs test equipment operation

COURSE CONTENT FOR ELECTRONIC RECORDING II

(First Semester)

I. School and course introduction (1 week)

Specific objectives:

To understand course requirements and content
To understand VICA
To be made aware of class and school policies
To be made aware of the grading policy

A. Reviews school policies

B. Reviews class policies

C. Reviews VICA

D. Reviews grading

E. Reviews course requirements

F. Reviews course description

II. Safety and first aid (½ week)

Specific objectives:

To learn good safety habits
To learn what to do in case of an accident

A. Reviews safety habits

B. Reviews first aid

III. Test equipment and tools (1 week)

Specific objectives:

To learn proper manner of using test equipment and tools
To learn how to set up a tool box

A. Reviews tool identification and use

B. Reviews test equipment use

III. **Test equipment and tools continued:**

C. Determines tool box needs

IV. **Microphones (2½ weeks)**

Specific objectives:

To learn advanced operating principles of microphones
To become familiar with the different types of microphones used

A. Learns advanced operating principles

1. Types of microphones
2. Microphone terminology
3. Phantom power
4. Directional characteristics
5. Polar patterns
6. Frequency response
7. Proximity effect
8. Microphone impedance
9. Microphone sensitivity
10. Balanced and unbalanced lines
11. Microphone plugs
12. Causes of distortion

B. Utilizes advanced microphone technique

1. Sound localization
2. Stereo microphone placement
3. Multi-microphone placement
4. Special purpose microphones
5. Miking various muscial instruments

V. **Speakers (1 week)**

Specific objectives:

To learn advanced operating principles of speakers
To become familiar with the different types of speakers

A. Learns advanced operating principles

B. Utilizes types of speakers

1. Speaker terminology

2. Directional characteristics

3. Frequency response

4. Room/speaker interface

5. Speaker enclosure systems

VI. **Recording console fundamentals (7 weeks)**

Specific objectives:

To understand advanced operating principles of all recording consoles
To understand advanced principles of the recording console in our studio

A. Understands advanced recording console terminology

B. Understands advanced control identification

C. Understands advanced signal flow

VII. **Tape machine (5 weeks)**

Specific objectives:

To perform routine maintenance
To learn advanced controls identification

A. Performs preventive maintenance

1. Tape machine cleaning

2. Tape machine alignment

B. Learns controls identification

COURSE CONTENT FOR ELECTRONIC RECORDING II

(Second Semester)

I. **Signal processing equipment (1 week)**

Specific objectives:

To gain advanced information on various types of signal processing equipment
To gain advanced information on the uses of various types of signal processing equipment

A. Utilizes limiters

B. Utilizes compressors

II. **Special effects equipment (1 week)**

Specific objectives:

To become acquainted with various types of advanced special effects
To gain information on the uses of various types of advanced special effects equipment

A. Utilizes digital delay

B. Utilizes harmonizer

C. Utilizes doubling

D. Utilizes flanging

E. Utilizes chorus

III. **Noise and noise reduction (1 week)**

Specific objectives:

To understand research on noise
To understand how noise is eliminated in recording and the various types of equipment used

A. Demonstrate advanced techniques in noise reduction

B. Demonstrate advanced techniques in Dolby noise reduction

III. **Noise and noise reduction continued:**

C. Demonstrate advanced techniques in DBX noise reduction

IV. **Basic studio design (2 weeks)**

Specific objectives:

To gain information on advanced design for a recording studio
To gain information on recording studio layout and equipment

A. Reviews latest technology on room layout

B. Reviews latest technology on construction materials

C. Reviews latest technology on recording equipment

V. **Remote recording (2 weeks)**

Specific objectives:

To gain advanced information on how recordings are made outside the recording studio
To gain advanced information on the equipment and items needed different from that of a recording studio

A. Reviews latest technology on remote recording unit

B. Reviews latest technology on equipment and materials

VI. **Acoustical tests and measurements (1 week)**

Specific objective:

To learn advanced concepts of acoustical testing periodically required in the recording studio

A. Reviews advanced technology on room tuning

B. Reviews advanced technology on audio test equipment

VII. **Advanced electronics (7 weeks)**

Specific objective:

To learn advanced concepts of electronics

A. Reviews DC theory

VII. Advanced electronics continued:

B. Reviews AC theory

VIII. Studio maintenance (3 weeks)

Specific objective:

To gain information necessary to perform needed studio maintenance

A. Reviews advanced troubleshooting

B. Reviews advanced test equipment operation

RESOURCE MATERIALS

Textbooks

Gabany, Vic. The Basics of the Recording Studio. Nashville: Vic Gabany Publisher, 1982.